

## CHAPTER XXIII

# Retrospect and Prospect

Compared with World War I or with the plans of the thirties it took a long time to bring the war decisively home to the enemy. In view of the total accomplishment, the mobilization of the U. S. Army in World War II was a speedy one. With the Corps of Engineers as with other branches of the Army, some phases of mobilization were well advanced during the early stages of the war. Most of the equipment used overseas had been selected before the attack on Pearl Harbor. Although one significant change in the structure of troop units was made as late as December 1943, all other major questions about the organization and duties of engineer troops had been answered well before then. Training troops and supplying them with equipment was a longer, more continuing process. Training activities reached their peak in the summer of 1943, while the high point in delivery of engineer supplies did not come until December 1944.

The Army of 1941 was much better prepared for war than the Army of 1917. During the period before Pearl Harbor it had grasped the opportunity to modernize its growing forces, to develop tactics consonant with its increased mobility and firepower. Much had also been learned about the complexity of supply, both for the modern Army and in aid of friendly governments.

There was one serious flaw in plans and preparations. Tactically and logistically the Army was readying itself for a blitzkrieg against the German forces on the continent

of Europe. An American blitzkrieg did occur when Bradley's armies drove across France to the frontiers of Germany. But that was 1944. Earlier offensives against the German forces, although terminated successfully, were not nearly so swift or so sure, while on the other side of the world American troops had to fight another kind of war altogether.

The Japanese attack and strategic decisions following the attack forced the Army to enter a new stage of plans and preparations, to turn from its preoccupation with tactics to reckon with logistics on a much larger scale than anticipated. The minimum number of service troops authorized by the Army would have sufficed for a mobile force operating over a relatively small area close to its base of supply. World-wide deployment, and in particular the movement into the Pacific, multiplied the need for service troops out of proportion to that for combat forces. The service most in demand was construction—for airfields, roads, ports, petroleum pipelines, for quarters, warehouses, and hospitals. The extent of the demand took even the Corps of Engineers by surprise.

Underestimation of the future construction task was a logical outgrowth of the Army's refusal to entertain the possibility of waging a truly global war. An underlying factor was its predilection for regarding itself exclusively as a fighting force. Within the Corps of Engineers the tendency to exalt

combat over service functions has been notable. Prior to the 1942 reorganization of the Army the War Department officially recognized the engineer combat tradition by designating the Corps an arm as distinguished from a service branch.

Given the expanded role of logistics and of air power, the 1942 reorganization of the Army into three commands was all but inevitable, but granting to air and logistics an equality with ground forces did not end the struggle for power among these elements. For the Engineers the wartime organization proved a mixed blessing. The change of designation from "arm" to "service" and the insertion of a layer of command between the Corps and the General Staff struck a blow at pride and prestige but otherwise occasioned little embarrassment. Where a given activity fell clearly and completely within the province of one of the three commands, as did engineer supply within ASF, administrative arrangements improved. Where the activity was scattered, as was the training of engineer troop units, the system became at times barely workable.

In the person of the Commanding General, AGF, who had considerable influence upon organization and training from the beginning of the emergency, the Engineers encountered a tactician who was an embodiment of the combat tradition and who regarded the new mobility as almost pure asset. To keep units lean, to travel light, to develop fighters was, in his view, to assure that the battle be joined quickly and concluded successfully. The Engineers' own preoccupation with combat engineering during the period before Pearl Harbor was intensified by his challenge to their position in the new scheme of tactics.

To the extent that the Corps emphasized

combat at the expense of the service function, future hardships in mobilization were unwittingly created. But in pointing out weaknesses in the new tactics the Corps said something that very much needed saying. Mobility depended on substantial engineer support. Before the validity of the argument could be demonstrated, however, engineer soldiers had to be supplied with modern equipment for overcoming natural and artificial obstacles. Construction machinery excepted, the Corps lacked such equipment when the war began in Europe and for many months thereafter.

This lag between words and deeds can be traced primarily to the small military budgets of the peacetime years. Perhaps, too, being forced to do with so little for so long left too great a residue of caution at the Engineer Board. A disposition to modify rather than to scrap and start all over explains in part the waste of time and talent in the provision of suitable emergency bridges. An equally potent influence in this particular case was the somewhat naive faith held by OCE and the Engineer Board that limits upon vehicular weights would remain fixed. To have looked abroad to the armor of foreign countries and to have concluded that the Ordnance Department must furnish heavier tanks would have shown an uncommon though extremely profitable sagacity. A similar insularity was evident in the skepticism with which OCE and the Engineer Board viewed ideas which came to them from outside the organization. The alacrity with which mapping instruments were adopted from German models was an acknowledgement of the supremacy of Germany in this field. Where an American model or a tried technique came into question, the organization exhibited consider-

ably less hospitality to change, a fact that was most clearly demonstrated in the matter of steel treadway and Bailey bridges.

But skepticism and perfectionism are not equivalent to rejection. The man who is without responsibility is gloriously free to dream, to experiment, to make claims for his inventions. The man who is accountable for failure is fettered by the necessity to reflect, to test, to prove. In the end the Corps of Engineers was greatly indebted to Great Britain not only for designing the Bailey bridge but also for armoring construction machinery and devising the first type of landing mat. The idea for pneumatic floats came from the enemy, Germany. Yet the Corps received its most substantial help from American industry, which offered excellent construction machinery and assisted in developing landing mat, mine detectors, petroleum pipelines, and other basic equipment.

Because military engineering involves the conversion of intrinsically civilian techniques to the needs of warfare the role of the Engineer Board often boiled down to a selection of the most suitable commercial product. During the prewar years the emphasis upon combat engineering placed a premium upon light and maneuverable construction machinery. Although these early models could not furnish enough power for the large-scale construction jobs which were to comprise the Corps' greatest contribution to victory, commitment to machinery signaled the Corps' modernization in concert with the Army as a whole, the first hint that the Engineers would make good on their claim of essentiality to the new infantry division and that they would be able to render the construction service ultimately required. Reliance upon power machinery meant that a job could be done

faster and with fewer men. Large as was the total strength of the Corps in World War II, engineer troops accounted for a smaller percentage of the Army in that conflict than in the earlier one. Unexpectedly, the advantage offered by savings in manpower threatened to be offset by the complications which the adoption of machinery introduced into the training and equipping of troops.

Despite its strong combat tradition the Corps of the thirties had a firm base from which to expand its service role. Many of its small but select group of Regular officers held advanced degrees in engineering and had, through assignments to civil works and federal projects, kept abreast of the latest construction techniques. A large Reserve was made up primarily of men from the construction industry. Contacts with that industry were nationwide, promising ready co-operation in recruiting skilled men and securing modern equipment.

The war plans of the twenties and thirties contemplated a relatively small amount of military construction in the United States. The eleven billion dollar program undertaken during World War II made unexpected inroads upon Engineer Reserve and Regular officers long before the Corps assumed formal responsibility for this construction. Skilled men who would have been drafted or recruited for duty with engineer troop units were deferred until camps and munitions plants were completed. Civilian employees of the Corps, slated to turn their talents to supply activities, formed instead the administrative backbone of the construction program. The construction machinery industry delivered great quantities of its products to government contractors rather than to troops.

The question is academic whether during

the defense period the Corps of Engineers or even the Army could have overcome the various powerful forces which opposed the full-scale conversion of the American economy to war production. Still the opportunity to prevent the acute shortage of construction machinery was present in the months before Pearl Harbor. A small stockpile of machinery could have been accumulated if the industry had been operating at full capacity and civilian consumption had been reduced. Failure to appreciate the significance of the switch from hand tools to power machinery, gross miscalculation of future construction activity, and a widespread belief that commercial products could be had for the asking combined to insure the loss of the opportunity. By early 1942 the Engineer procurement program was at a disadvantage in competing for steel against the claims of ships, tanks, and industrial construction. The gap between deliveries and requirements was so wide that all manner of makes and models and much used machinery were forced into service in face of obvious injury to the supply system as a whole.

By gaining a large measure of authority over the procurement and distribution of key items of engineer equipment, the Corps succeeded in mitigating shortages. The ultimate solution to the complex problems of supply was to be found, of course, in the more general administrative and economic controls established by WPB and ASF. Since the aim of both the civilian and the military agencies was to balance supply and demand, accurate statements of requirements were obligatory. The Engineers, with the bulk of their needs tied up in relatively unpredictable quantities of Class IV matériel, faced unusual difficulties in arriving at such statements. No method employed

proved satisfactory to all concerned. Having been continually trapped by last-minute information about strategy and having stifled in the confined atmosphere of scarcity for so long, the Engineers favored a less constricted system, a shifting of responsibility for estimating requirements to the theaters, with procurement to be initiated without question by the Supply Division. This anomalous suggestion did not jibe with the thinking of the General Staff which had to evaluate requests from all fronts.

The very real obstacles which the Engineers encountered in getting equipment into the hands of troops were magnified by a dearth of supply experience within the Corps and by a widespread disdain among Engineer officers for such work. Grades for supply officers were low. The structure of the supply organization was subjected to frequent changes, not all of which were for the better. Under these adverse circumstances ASF Headquarters was of incalculable value. The Corps was at times justifiably critical of the paper work and of the ceaseless drive for managerial efficiency coming down from ASF, but effective guidance through the maze of operations that characterized the wartime economy more than balanced the needling and bureaucracy.

Long after the shift to mechanical power the Engineers continued to be mistaken for an organization of common laborers. The mass of enlisted men assigned were unskilled, and a large percentage scored low on the Army General Classification Test. One of the main reasons for the deficiency in skills and the preponderance of low scores was the high proportion of Negroes allocated. The segregation policy forced a concentration of poorly qualified individuals within certain units, making it almost im-

possible to raise those units to a desirable level of efficiency. True, the Engineers could absorb more slow learners, both Negro and white, than some of the other branches of the Army, but not to the same extent as in World War I. Had the pick and shovel remained the identifying symbols of the Engineers, such men could have been assimilated easily. For the operation of a bulldozer—the trademark of the Engineers in World War II—a somewhat better educational or mechanical background was mandatory.

Only gradually, after an accumulation of evidence from overseas, did the Corps begin to find acceptance as a body of skilled and semiskilled workmen. One measure of this acceptance was the great freedom allowed the Engineers to recruit men from the construction industry. Engineer units serving with ASF acquired many ready-made occupational specialists from this source, although never in the numbers that had been thought possible. AGF units fared less well, in part because of the rivalry between ASF and AGF. AAF concentrated the small number it got into a very few units, thereby losing the full potential of men whose practical knowledge should have been disseminated during the period of training. The men obtained by voluntary induction furnished a leavening hard to overvalue. If a small portion could have been channeled into supervisory positions in the segregated Negro units their contribution would have been even greater.

Corresponding to the drive for enlisted volunteers with special backgrounds was the effort to locate men who had bossed construction jobs or who were otherwise qualified to become Engineer officers. Although disappointingly small in number, the group commissioned directly from civil life brought

to troop units a better grasp of engineering principles than did the youthful and hasty product of OCS. Too frequently the OCS classes contained men whose previous education and work were unrelated to the job ahead. Too frequently the compulsion to turn out quantities of officers forced a lowering of standards for graduation. The inferior quality and inexperience of many OCS graduates, coupled with the diversion of many officers of proven ability to the military construction program, made doubly valuable those who entered the Corps from civilian positions closely akin to military tasks.

In a nation so highly industrialized the frustrating search for men with mechanical and engineering experience developed unexpectedly. During World War I the U. S. Army had depended upon the Allies for much of its matériel. Reversal of this situation during World War II meant that a large portion of the labor force, technically subject to the draft, remained on the farms and production lines. Another sizable quantity of those supposedly eligible for military service was rejected because of substandard health. Fewer of the nation's adult males could be inducted than had been anticipated; even fewer could fill positions calling for specific skills.

More deeply affected by the manpower pinch than AAF or ASF, AGF capitalized further upon the increase in firepower and mobility, introducing the flexible group system of small units which could be combined and recombined, employed in the rear or brought forward quickly as occasion demanded. The Engineers were particularly opposed to the extension of this type of organization to service units. Construction jobs in rear areas were usually of such magnitude as to require a force of at least regi-

mental size. Other arguments, far from frivolous, advanced against the group system were loss of regimental commands for Engineer officers and of *esprit de corps* generally. The sense of belonging to an organization large enough to accomplish significant tasks was no less real for being intangible, and no organization can attract and keep good men unless it offers opportunities for advancement. From top to bottom, in fact, mechanization of engineer work implies higher grades and ratings than were offered during World War II. The construction battalion, authorized at the end of 1943, contained almost as many men as the general service regiment it was designed to replace and accorded greater recognition to their skills. Not fully tested during World War II, the adequacy of the battalion as the basic construction unit and the practicability of applying the group principal to engineer units, combat as well as service, remained to confront postwar organizational experts.

While bowing to pressure for manpower economies, the Corps of Engineers emerged from World War II with a greatly altered troop unit structure, the most obvious characteristic of which was variety. Some specialization was evident before the war—certain units being assigned to fast jobs of a temporary nature in forward areas and other units to more complicated and permanent work in the rear—but this was only a beginning. In several instances engineer units came into being or under the control of one of the three commands not so much because of diverse duties but because a command desired to acquire or retain power. Little real difference in functions could be discerned between various types of supply units. The clear-cut line originally drawn between ASF construction units and engi-

neer aviation units gradually blurred and led to jurisdictional disputes overseas. In the United States, division of control over these and other units confused planning for the troop basis and hampered efforts to simplify organization and standardize training.

The large size of the construction task in World War II, on the other hand, made some breakdown both feasible and economical. The war itself brought certain construction operations to the fore for the first time. New and special units for laying petroleum pipelines and for the reconstruction of ports helped fill the growing list. The multiplicity in types of units which arose naturally in consequence of easily differentiated missions eased the burdens of training. Such skilled and semiskilled men as were made available to the Engineers were apt to be familiar with only one aspect of construction and therefore could be assimilated more quickly in a specialized organization. Recruiting drives could be aimed at particular civilian occupational groups in order to fill particular units. Men with limited abilities could learn a few simple skills quickly. To a large extent engineer troops trained as specialists for assignment to specialist units.

This was not a training pattern which the Engineers preferred, but one dictated by the exigencies of time, equipment, and manpower. Even within units with the most restricted functions the Corps desired each man to be grounded thoroughly in all phases of the Engineer mission. The soundness of this goal was demonstrated time and again after the units reached their overseas destination. Seldom did any theater have enough engineers. Special functions were impossible to keep separated. Engineer units of whatever type had to fall to at any engineering task.

The shortage of time, of equipment, and of seasoned officers prompted the Engineers early in the war to decide that closely supervised centers would provide optimum conditions for training engineer units as well as individual replacements. Familiarity with machinery and practice in working as a gang were of more value to most engineer units than a precise comprehension of their place in large-scale military operations. If maneuvers afforded the latter experience, so much the better, but with the exception of divisional combat battalions a less elaborate field period was an adequate substitute. Training at engineer centers offered the advantage of closer control, a better chance to carry out an orderly program with uniform standards.

Standards differed markedly in the three commands. Only for those troops serving with ASF did the Engineers effect a desirable amount of centralization. AGF would not bring similar units together for instruction because of definite policy; AAF did not largely through neglect. Although the Corps had many differences with higher authority in ASF, these altercations were never so serious as those with AAF and AGF. Most of the disturbances to the training programs at ASF centers were common to the Army as a whole. ASF never questioned the importance of the logistical task as did AGF. Within ASF there was never any quarrel as there was in AAF over the recruit's indoctrination as an engineer soldier. A lack of appreciation of the training required by engineer units to assure satisfactory performance overseas compounded the difficulties in both AAF and AGF.

Despite the disparate influences of the three commands and the makeshift arrangements which resulted from the scarcity of essential construction machinery, the

Corps might still have transformed most of the men into versatile engineer soldiers if only there had been more time, or at least a predictable amount of time. The War Department could not, however, devise a training formula that would apply under all circumstances, but issued instead a series of regulations designed to produce the best product consistent with current strategy. The squeeze which strategy exercised upon time reduced the scope of Engineer subjects in the preparation of both units and replacements and repeatedly burdened units with basic training. Instances multiplied when a choice had to be made between giving the recruit a general course of engineering training or one in a limited field of specialization. To man the new equipment, great numbers of recruits had to be given the more restricted training. Not until mid-1943, when the peak training load had already been reached, was it possible to establish schedules of sufficient length for the Corps to approach its ideal training goal.

In general, the programs which OCE prepared for the various units showed a high order of planning and were flexible enough to allow commanding officers ample latitude to make changes. Units which made poor showings were often those which were unable to complete the full schedule. Some faulty programming did occur, notably in the case of crews for ships and dredges, but OCE showed itself far better qualified to judge the technical requirements for engineer units than did the training staffs of any of the three commands.

Zealously, but not always successfully, the Corps of Engineers asserted its prerogative as an organization of experts to define its mission, to determine the quantity and quality of its members, to choose its

equipment, to decide how it must be organized and trained. In defining and redefining its tasks, in adjusting to the new Army and to the demands of global warfare, the Corps exhibited an admirable degree of flexibility, imagination, and ingenuity. The ease with which the Engineers took hold of amphibious doctrine and carried it beyond the training of boat crews to the development of shore parties is but one instance of a ready assumption of new duties. In the performance of more traditional functions the Corps displayed no less ability. Map-

ping, for example, was approached in full realization of the limitations as well as the potentialities of aerial photography. That the Engineers handled with distinction many assignments both new and old was owing largely to the high caliber of its officers. In the future as in the past, the preparedness and effectiveness of the Corps of Engineers will depend primarily upon the ability of its officers to provide the necessary bridge between the latest developments in civilian engineering and the most advanced techniques in warfare.